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PATENT SPECIFICATION

228,162



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Complete not accepted.

COMPLETE SPECIFICATION.

Process for Purifying Oils which have been used for Lubricating Internal Combustion and like Engines.

I, JOSEPH DREXFUS, a citizen of the French Republic, of 48, rue de l'Hotel de Ville Lyons, France, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The problem of purifying the used-up oils proceeding from the lubrication of internal combustion engines is of great importance. In fact at the end of a certain period of working the lubricating oil contains carbonaceous particles arising from the carbonization of the oil in the engine cylinders. During the lubrication these carbonaceous particles graze the walls of the cylinders and carry away metallic dust which in its turn accelerates by friction the wear and tear of the engine. Hence the oil rapidly becomes the vehicle of elements deteriorating the engine.

Hitherto it has not been possible to attain satisfactory results by means of the two methods proposed. Filtering has not solved the problem, as the metallic and carbonaceous particles pass through the filters which cannot be too close because of the viscosity of the oil. The setting of the used-up oil followed by decanting is a long and incomplete process.

The German servant Holde has made an experiment with regard to this matter. To a solution of colloidal graphite in oil, he added fuller's earth and benzole to dissolve the oil, and obtained an absorption of the graphite by the fuller's earth. It has not been possible to apply this experiment in indus-

try, as it only gives possible results in the presence of benzole, since the latter added even in a small proportion has the power of considerably reducing the viscosity of the oil and consequently of rendering it unfit for lubricating use. 40

It may be admitted that the carbon contained in the residual oil from internal combustion engines is in the colloidal state and that explains why the means of ordinary filtering are ineffective. It will therefore be necessary to have recourse to filtering by means of an ultra-filter. The fuller's earth in Holde's experiment acts as an ultra-filter without, however, giving satisfactory results when the oil has 55 not been dissolved in benzole.

The applicant's process consists in obtaining, in the presence of fuller's earth or other absorbent matter, the coagulation of the carbonaceous colloidal particles, by the use of salts of acids of high valency, in such a way that the said particles unite in a great number of groups constituting grains capable of filtering on the fuller's earth without the addition of either benzole or petrol. 60

The colloidal particles of carbon may be considered, when they are in suspense in the oil, as charged with positive electricity. It is this electricity which prevents them from uniting and thus forming larger grains capable of passing through a filtering layer. If one succeeds in neutralizing this positive electricity there will be coagulation and consequently purification. This result is obtained by causing electrolytes being 70 to act on the oil said electrolytes being 75

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composed of salts of acids of high valency such as: sulphates, and phosphates, tellurates, seleniates, arseniates and antimoniates, and by combining this coagulating action with the absorbent action of a finely powdered earth.

The applicant's process is therefore based on the use of a mixture of one or more absorbent earths, finely divided, 10 with one or more electrolytes composed of the salts of acids of high valency,

The absorbent substance can be, fuller's earth, terra sienna, "somieres" earth, dyers' earths, silicious sinter, pulverized fire-brick, colouring matters insoluble in oil, or the hydrates of oxides of heavy metals.

The electrolytes are principally sulphates and phosphates, tellurates, seleniates, arseniates and antimoniates. The treatment produces no change in the viscosity of the oil.

I have treated a semi-fluid oil having a viscosity according to Engler and at 50° C. of 10.5 which has lubricated a motor vehicle for 6000 kilometres, with a mixture of:

Somieres earth - - -	60%
Terra sienna - - -	35%
Sulphate of potash - - -	2%
Sulphate of alumine - - -	3%

and a filtrate was obtained composed of an absolutely transparent oil without any deposit or disturbance and having a viscosity of 11° Engler at 50° C. The increased viscosity of the oil is due to the volatilization of the light hydrocarbides

of the oil at the high temperature prevailing in the motor.

The advantages derived from the use 40 of the process are: decrease of the wear and tear of internal combustion engines: the most perfectly ensured tightness, better preservation of the lubricating properties of the oil and a reduction of 45 the consumption of the oil.

This process is applicable to oils from all motors and internal combustion engines gas engines and the like.

Having now particularly described and 50 ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. Process for purifying used oils from 55 internal combustion and like engines, consisting in treating these oils with a mixture of one or more absorbent earths with one or more electrolytes composed of salts of acids of high valency such as 60 sulphates, phosphates, tellurates, seleniates, arseniates, antimoniates, such mixture acting as coagulant filtration means for the colloidal carbon contained in the oil.

2. A process for purifying oils substantially as herein described.

Dated this 19th day of January, 1925.

For the Applicant,

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